

SERVICE MANUAL

**MODEL
L14, L16 & L18 SERIES
ENGINES**

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION EF

FUEL SYSTEM

EF

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FUEL SYSTEM

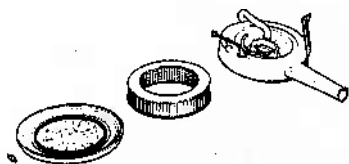
AIR CLEANER

Caution: Never attempt to clean this element with a brush or air blast.



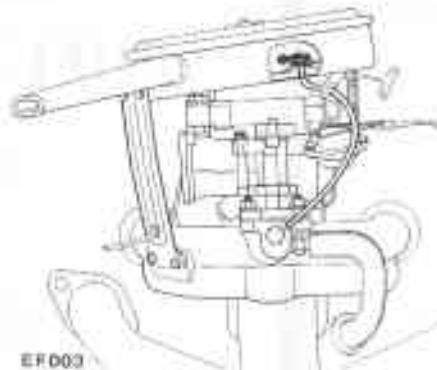
EF001

Fig. EF-1 Air cleaner for twin carburetor



EF002

Fig. EF-2 Air cleaner for single carburetor



EF003

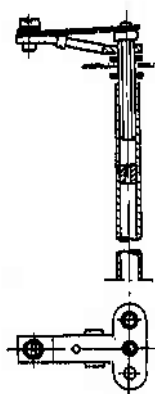
Fig. EF-3 Piping of idle compensator

The air cleaner used on the single carburetor is equipped with an idle compensator. This compensator is essentially a thermostatic valve and controls the excessive enriching of the mixture as a result of high idle temperatures. When the under-the-hood temperatures are high, the bimetal located in the air cleaner is heated by intake hot air and lifts the valve to open. This permits additional fresh air into the intake manifold and compensates for the increased richness of the air-fuel mixture in order to maintain smooth idle engine operation.

The idle compensator thermostatic valve partially opens at 55°C and (131°F) fully opens at 65°C (149°F). Never attempt to disassemble this unit since it is sealed for tightness and properly adjusted for valve timing.

DESCRIPTION

The air cleaner element is of a viscous paper type. It does not require any cleaning service between renewals. This element should be replaced every 40,000 km (24,000 miles) under normal conditions. In areas where dust conditions are severe, it is necessary to replace it more often than under normal conditions.



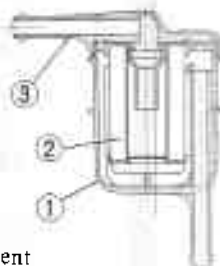
EF004

Fig. EF-4 Schematic of idle compensator

FUEL STRAINER

DESCRIPTION

The fuel strainer is of a cartridge type. It uses fiber mat as strainer element which can be checked for condition from the outside. This strainer should be replaced every 20,000 km (12,000 miles) under normal conditions.



- 1 Body
- 2 Paper element
- 3 Cover

EF005

Fig. EF-5 Sectional view of cartridge type fuel strainer

REMOVAL

Disconnect inlet and outlet fuel lines from fuel strainer, and remove fuel strainer.

Note: Before disconnecting fuel lines, use a container to receive the remaining fuel in lines.

FUEL SYSTEM

FUEL PUMP

CONTENTS

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DESCRIPTION

The fuel pump transfers fuel from the tank to the carburetor in sufficient quantity to meet the engine requirements at any speed or load.

The fuel pump is of a pulsating type designed for easy maintenance. It consists of a body, rocker arm assembly, fuel diaphragm, fuel diaphragm spring, seal inlet and outlet-valve. Figure EF-6 shows a cross-sectional view of the pump.

The fuel diaphragm consists of specially treated rubber, which is not affected by gasoline and held in place

by two metal discs and a pull rod.

This type of fuel pump is used in the L14, L16 and L18 engines.

FUEL PUMP TESTING

A fuel pump is operating properly when its pressure is within specifications and its capacity is equal to the engine's requirements at all speeds. Pressure and capacity must be determined by two tests, while the pump is still mounted on the engine. Be sure there is fuel in the tank when carrying out the tests.

Note: Locate this T-connector as close to carburetor as possible.

3. Connect a suitable pressure gauge to the opening of T-connector, and fasten the hose between carburetor and T-connector with a clip securely.

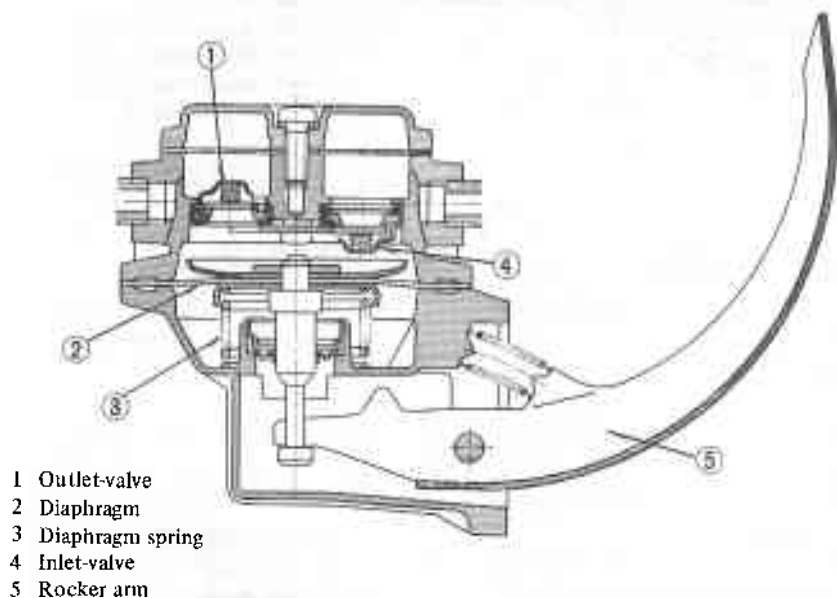
4. Start and run the engine at varying speeds.

5. The pressure gauge indicates static fuel pressure in the line. The gauge reading should be within the following range.

0.18 to 0.24 kg/cm²
(2.56 to 3.41 lb/in²)

Note: If the fuel in the carburetor float chamber has run out and engine has stopped, remove clip and pour fuel into carburetor. Fasten clip securely and repeat static pressure test.

Pressure below the lower limit indicates extreme wear on one part or a small amount of wear on each working part. It also indicates ruptured diaphragm; worn, warped, dirty or gumming valves and seats, or a weak diaphragm return spring. Pressure above the upper limit indicates an excessively strong tension of diaphragm return spring or a diaphragm that is too tight. Both of these conditions require the removal of pump assembly for replacement or repair.



EF006

Fig. EF-6 Schematic view of fuel pump

Static pressure test

The static pressure test should be conducted as follows:

1. Disconnect fuel line between carburetor and fuel pump.

2. Connect a rubber hose to each open end of a T-connector, and connect this connector-hose assembly between carburetor and fuel pump.

Capacity test

The capacity test is conducted only when static pressure is within the specification. To conduct this test, proceed as follows:

FUEL SYSTEM

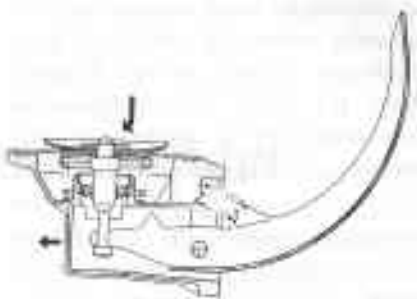
1. Disconnect pressure gauge from T-connector and, in its vacant place, install a suitable container as a fuel sump.
2. Start engine and run at 1,000 rpm.
3. The pump should deliver 1,000 cc (2.11 U.S. pts.) of fuel in one minute or less.

If little or no fuel flows from the open end of pipe, it is an indication that fuel line is clogged or pump is malfunctioning.

REMOVAL AND DISASSEMBLY

Remove fuel pump assembly by unscrewing two mounting nuts and disassemble in the following order.

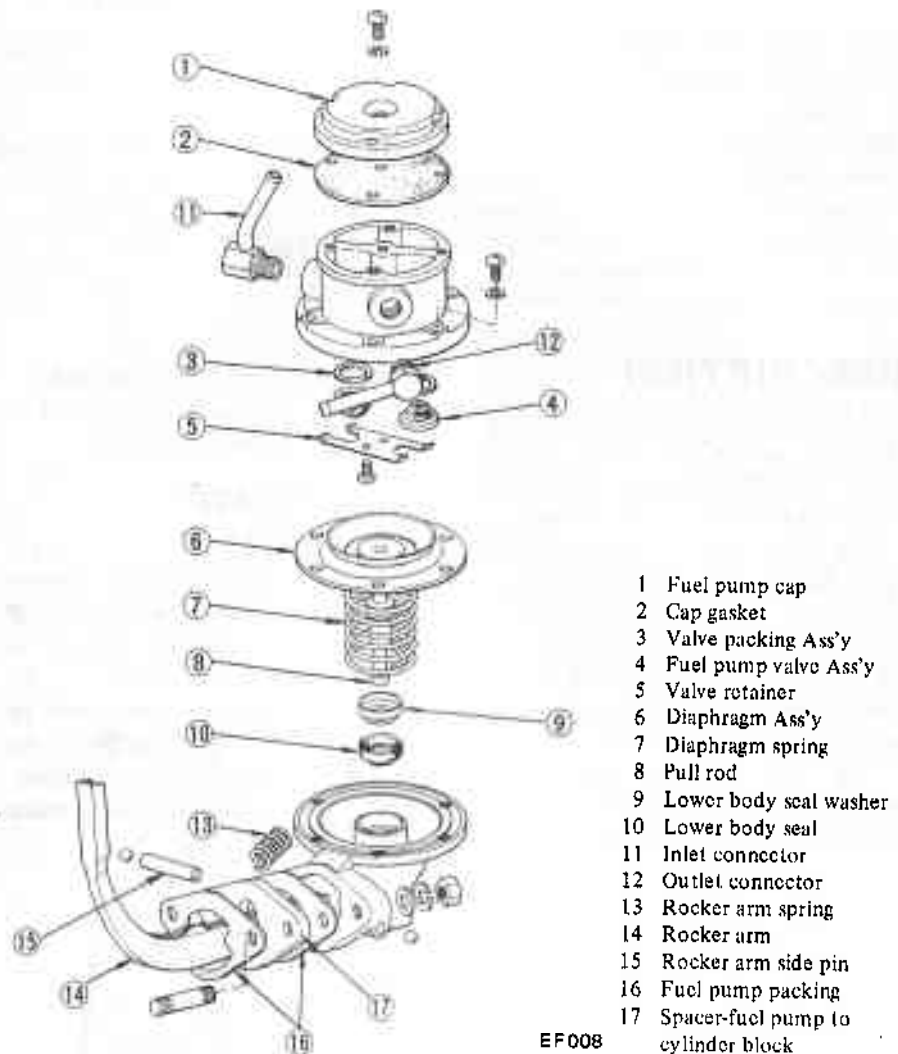
1. Separate upper body and lower body by unscrewing body set screws.
2. Take off cap and cap gasket by removing cap screws.
3. Unscrew elbow and connector.
4. Take off valve retainer by unscrewing two valve retainer screws and two valves are easily removed.
5. To remove diaphragm, press down its center against spring force. With diaphragm pressed down, tilt it until the end of pull rod touches the inner wall of body. Then, release the diaphragm to unhook push rod. Use care during this operation not to damage diaphragm or oil seal.



EF007

Fig. EF-7 Removing pull rod

6. Drive out rocker arm pin by using a press or hammer.



EF008

- 1 Fuel pump cap
- 2 Cap gasket
- 3 Valve packing Ass'y
- 4 Fuel pump valve Ass'y
- 5 Valve retainer
- 6 Diaphragm Ass'y
- 7 Diaphragm spring
- 8 Pull rod
- 9 Lower body seal washer
- 10 Lower body seal
- 11 Inlet connector
- 12 Outlet connector
- 13 Rocker arm spring
- 14 Rocker arm
- 15 Rocker arm side pin
- 16 Fuel pump packing
- 17 Spacer-fuel pump to cylinder block

Fig. EF-8 Structure of fuel pump

INSPECTION

1. Check upper body and lower body for cracks.
2. Check valve assembly for wear on valve and valve spring. Blow valve assembly with breath to examine its function.
3. Check diaphragm for small holes, cracks or wear.
4. Check rocker arm for wear at the portion in contact with camshaft.
5. Check rocker arm pin for wear. A worn pin may cause oil leakage.
6. Check all other components for any abnormalities and replace with new parts if necessary.

ASSEMBLY

Reverse the order of disassembly. Closely observe the following instructions.

1. Use new gaskets.
2. Lubricate rocker arm, rocker arm link and rocker arm pin before installation.
3. To test the function, proceed as follows:

Position fuel pump assembly about 1 meter (3.3 ft) above fuel level of fuel strainer and connect a pipe from strainer to fuel pump.

Operate rocker arm by hand. If fuel is drawn up soon after rocker arm is released, fuel pump is functioning properly.

FUEL SYSTEM

TWO-BARREL CARBURETOR

CONTENTS

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Adjustment of fast idle opening	EF- 9	CORRECTIONS	EF-13
Adjustment of interlock opening of primary		SPECIFICATIONS AND SERVICE DATA	EF-14
and secondary throttle valves	EF-10		

DESCRIPTION

Carburetor type	Applied engine
213304-361	L18 with manual transmission
213304-421	L18 with automatic transmission
213282-331	L16 with manual transmission
213282-341	L16 with automatic transmission
213282-221	L14 with manual transmission

4. The carburetor for automatic transmission is equipped with so-called dash pot; that is, it makes smooth deceleration without engine stall at any operating condition.

These carburetors are almost similar in appearance as explained above except the dash pot for the automatic transmission models.

The differences in performance are explained in the following specifications table.



EF009

Fig. EF-9 External view for manual transmission



EF010

Fig. EF-10 External view for automatic transmission

As almost all the mechanism of these carburetors are quite similar, the general explanation applies with all except for some variations.

These are downdraft type and are designed to increase power and fuel economy.

These carburetors present several distinct features of importance to the vehicle owners.

A summary of features is as follows:

1. Secondary throttle valve is operated by the diaphragm which is actuated by the vacuum so that the higher power and better acceleration are achieved as compared with the mechanical throttle valve type.
2. The power valve mechanism, so-called vacuum piston type, affords high speed performance.
3. Accelerating pump gives excellent acceleration.

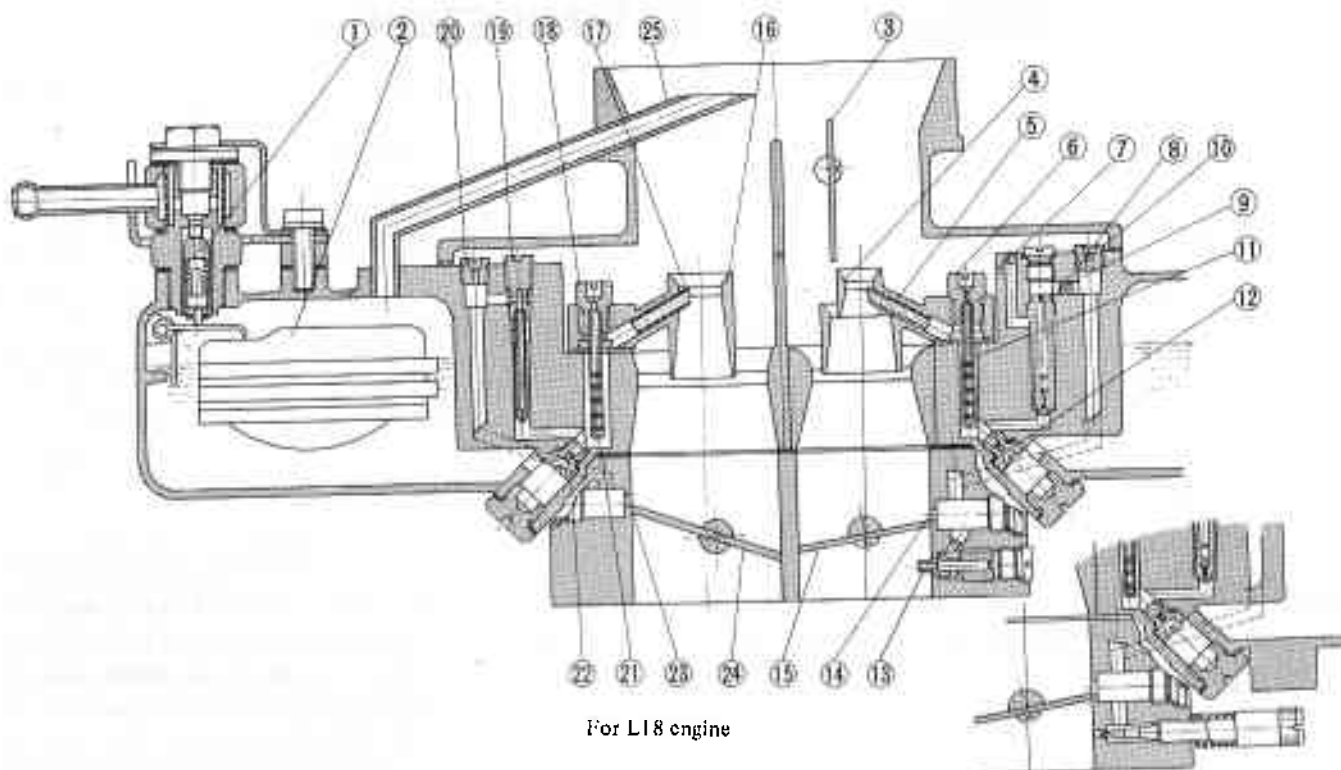
STRUCTURE AND OPERATION

These carburetors consist of the primary system for normal running and the secondary system for full load running.

The float system which is commonly used by primary and secondary systems, the secondary switchover mechanism, the starting mechanism, accelerating mechanism, etc. are also attached.

On these carburetors, both primary and secondary main systems adopt zenith Stromberg type nozzle.

FUEL SYSTEM



- | | | | |
|-----------------------|-----------------------|----------------------|----------------|
| 1 Float valve | 10 2nd slow air bleed | 18 S. Main air bleed | For L16 engine |
| 2 Float | 11 P. Emulsion tube | 19 Step jet | |
| 3 Choke valve | 12 P. Main jet | 20 Step air bleed | |
| 4 P. Small venturi | 13 Idle nozzle | 21 S. Emulsion tube | |
| 5 P. Main nozzle | 14 Bypass hole | 22 S. Main jet | |
| 6 P. Main air bleed | 15 P. Throttle valve | 23 Step hole | |
| 7 1st slow air bleed | 16 S. Small venturi | 24 S. Throttle valve | |
| 8 Slow jet | 17 S. Main nozzle | 25 Air vent pipe | |
| 9 Slow economizer jet | | | |

EF011

Fig. EF-11 Sectional view of two-barrel carburetor

Primary system

1. Primary main system

The primary main system is of zenith stromburg type. Fuel flows as shown in Figure EF-11 through the main jet, mixing with air which comes from the main air bleed and passes through the emulsion tube, and is pulled out into the venturi through the main nozzle.

2. Idling and slow system

During low engine speed, as shown in Figure EF-11, fuel flows through the slow jet located in rear left side of main jet, mixing with air coming from the 1st slow air bleed, and passes through the slow economizer jet, again mixing with air coming from the 2nd slow air bleed and then is pulled out into the engine through the idle hole and bypass hole.

Adoption of the submerged type of slow jet eliminates such hesitation as occurs on sudden deceleration of the vehicle.

Slow economizer system is useful to obtain smooth deceleration at high speed. Models 213304-361 and -421 are equipped with the idle nozzle as shown in Figure EF-11. Through this nozzle, idling mixture is further atomized by air stream below throttle valve and ensures the stable idling.

Small opening of the throttle valve in idling or partial load creates a large negative pressure in the intake manifold.

By this negative pressure, fuel is measured through the slow jet located behind the main jet. And air coming from the 1st slow air bleed is mixed

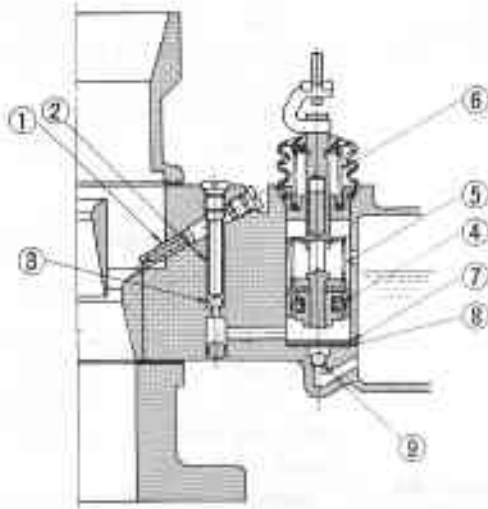
with fuel in the emulsion hole.

This mixture is further mixed and atomized with air coming from the 2nd slow air bleed. The atomized mixture is supplied to the engine from the idle hole and bypass hole via the slow system passage.

3. Accelerating mechanism

The carburetor is equipped with the piston type accelerating mechanism linked to the throttle valve. When the primary throttle valve, shown in Figure EF-12, is closed, the piston goes up, and fuel flows from the float chamber through the inlet valve into the space under the piston. When the throttle valve is opened, the piston goes down, opening the outlet valve, and fuel is forced out through the injector.

FUEL SYSTEM



- 1 Pump injector
- 2 Weight
- 3 Outlet valve
- 4 Piston
- 5 Damper spring
- 6 Piston return spring
- 7 Clip
- 8 Strainer
- 9 Inlet valve

EF012

Fig. EF-12 Acceleration mechanism

4. Starting mechanism

Pull the choke button to close the choke valve fully, then start the engine. This provides a rich mixture, making it possible to start the engine quickly. When the engine is started, the choke valve is opened at an adequate angle automatically, which prevents overchoking and ensures a smooth engine performance. While the engine is being warmed up, it increases in speed at steps, and by releasing the choke button an optimum engine speed can be obtained. With the choke valve closed fully, the primary throttle valve is caused to open at an angle best suited for starting through a link mechanism.

5. Power valve mechanism

The power valve mechanism, so-

called vacuum piston type, utilizes the vacuum below the throttle valve.

When the throttle valve is slightly opened during light load running, a high vacuum is created in the intake manifold. This vacuum pulls the vacuum piston upward against the spring, leaving the power valve closed. When the vacuum below the throttle valve is lowered during full load or accelerating running, the spring pushes the vacuum piston downward, opening the power valve to furnish fuel.

6. Dash pot device

< Provided only for model 213304-421 and 213282-341 carburetor for automatic transmission >

These carburetors are equipped

with a dash pot interlocked with the primary throttle valve through a link mechanism. The dash pot, which is exclusively installed on vehicles equipped with automatic transmission, is intended to prevent engine stall that would result from quick application of the brake immediately after driving the vehicle, or from the quick release of the accelerator pedal after treading it slightly.

When the primary throttle valve is closed at 11° point from fully closed position, a throttle lever strikes against the dash pot stem and makes the primary throttle valve gradually close, thus keeping the engine running.

Secondary system

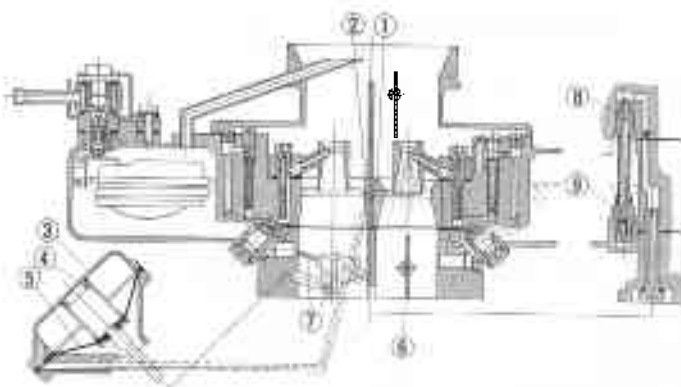
1. Secondary main system

The secondary main system is of zenith Stromburg type.

Fuel-air mixture produced by the functions of the main jet, main air bleed and emulsion tube, in the same manner as in the primary system, is pulled out through the main nozzle into the small venturi.

Due to the double venturi of the secondary system, the higher velocity air current passing through the main nozzle promotes the fuel atomization.

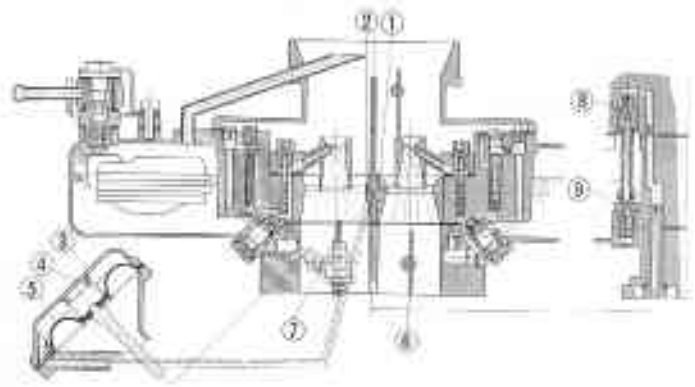
The structure is almost the same as the primary side, but emulsion tube and venturi are different. Take care not to assemble improperly.



EF013

- 1 P. Vacuum port
- 2 S. Vacuum port
- 3 Diaphragm chamber cover
- 4 Diaphragm spring
- 5 Diaphragm
- 6 S. Throttle valve
- 7 P. Throttle valve
- 8 Vacuum piston
- 9 Power jet

Fig. EF-13 Full throttle at low speed



EF014

Fig. EF-14 Full throttle at high speed

FUEL SYSTEM

2. Step system

The construction of this system may correspond to the idling and slow system of the primary system.

This system aims at the proper filling up of the gap when fuel supply is transferred from the primary system to the secondary one. The step port is located near the secondary throttle valve edge in its fully closed state.

3. Secondary - switchover mechanism

The secondary throttle valve is linked to the diaphragm which is actuated by the vacuum created in the venturi. A vacuum jet is provided at each of the primary and secondary venturies, and the composite vacuum of these jets actuates the diaphragm.

As the linkage, shown in Figure EF-13, causes the secondary throttle valve not to open until the primary throttle valve opening reaches approximately 50°, fuel consumption during normal operation is not excessive.

During high speed running, as shown in Figure EF-14, as the vacuum at the venturi is increased, the diaphragm is pulled against the diaphragm spring force, and then secondary throttle valve is opened.

The other side, during low speed running (as the primary throttle valve opening does not reach 50°), the secondary throttle valve is locked to close completely by the locking arm which is interlocked with primary throttle arm by linkage.

When the primary throttle valve opening reaches wider position than 50°, the secondary throttle valve is ready to open, because the locking arm revolves and leaves from the secondary throttle arm.

Float system

There is only one float chamber, while two carburetor systems, primary and secondary, are provided.

Fuel fed from the fuel pump flows through the filter and needle valve into the float chamber. A constant fuel level is maintained by the float and needle valve.

Because of the inner air vent type of the float chamber ventilation, the fuel consumption will not be influenced by some dirt accumulated in the air cleaner.

The needle valve includes special hard steel ball and will not wear for all its considerably long use. Besides, the insertion of a spring will prevent the flooding at rough road running.

ADJUSTMENT

Idling adjustment

Idling adjustment is made by throttle adjust screw and idle adjust screw as shown in Figure EF-15.



1 Throttle adjust screw
2 Idle adjust screw
EF015
Fig. EF-15 Idling adjustment

1. Check to be sure that float level is correct while running engine at idle speed.

2. Using a suitable screwdriver, turn out idle adjust screw approximately $2 \frac{1}{4}$ (L14 and L16) or $1 \frac{1}{2}$ (L18) turns, starting from fully closed position. Turn in throttle adjust screw two or three turns and start engine.

3. Turn out throttle adjust screw gently until specified engine idle speed is approximately obtained.

4. Turn in or out idle adjust screw until engine runs smoothly at the highest speed.

5. Turn out throttle adjust screw until specified engine speed is obtained.

6. Readjust idle screw until engine runs smoothly at the highest speed (with highest vacuum reading).

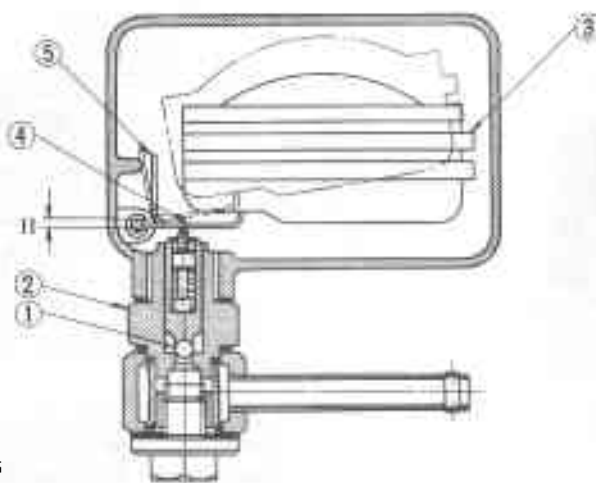
7. Then, readjust throttle screw until specified engine speed is obtained.

Repeat these operations until smooth and specified engine speed has been obtained.

	L14, L16 and L18
Engine vacuum idle speed (rpm)	600 or above
Standard value (at idle speed) mmHg (inHg)	450 (17.72)

Fuel level adjustment

A constant fuel level is maintained by float level and ball valve.



EF016

- 1 Ball valve
- 2 Valve seat
- 3 Float
- 4 Float arm
- 5 Float stopper

Fig. EF-16 Adjusting fuel level

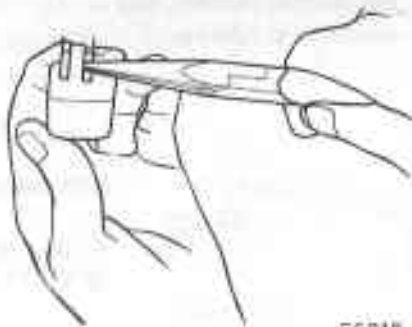
FUEL SYSTEM

If the fuel level is in accord with level gauge line, float level is properly set. If float level is not correct, adjust it by bending float seat as shown in Figure EF-17.



EF017

Fig. EF-17 Adjusting float seat



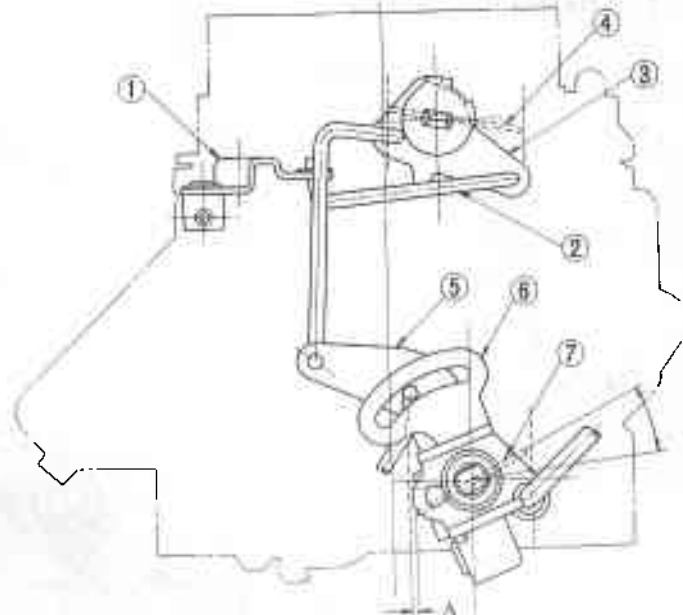
EF018

Fig. EF-18 Adjusting float stopper

Approximately *H mm is required for effective stroke of needle valve. So adjust gap between valve stem and float seat to *H mm with float fully lifted up by bending float stopper.

*H: 1.0 mm (0.0394 in)

Adjustment of fast idle opening

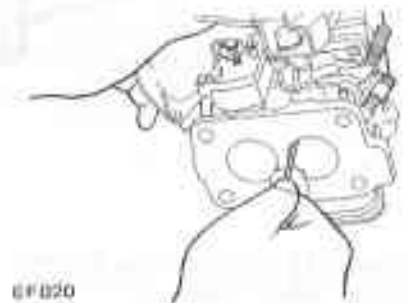


EF019

- 1 Choke lever
- 2 Crank rod
- 3 Choke arm
- 4 Choke valve
- 5 Starting lever
- 6 Throttle arm
- 7 Throttle valve

Fig. EF-19 Adjusting fast idle opening

Choke valve at fully closed position automatically opens throttle valve at an optimum angle for starting engine through a link mechanism.



EF020

Fig. EF-20 Measuring fast idle opening

After reassembly, or in a check on interlock opening angle, bend choke connecting rod for adjustment so that

a fully closed choke valve will bring clearance A shown in Figure EF-19.

Carburetor type	Approximate fast idle opening	Dimension "A" mm (in)
213304-361 213304-421	18°	1.55 (0.0610)
213282-331 213282-341	19°	1.3 (0.0512)
213282-221	20°	1.4 (0.0563)

FUEL SYSTEM

Adjustment of interlock opening of primary and secondary throttle valves

Adjustment of dash pot

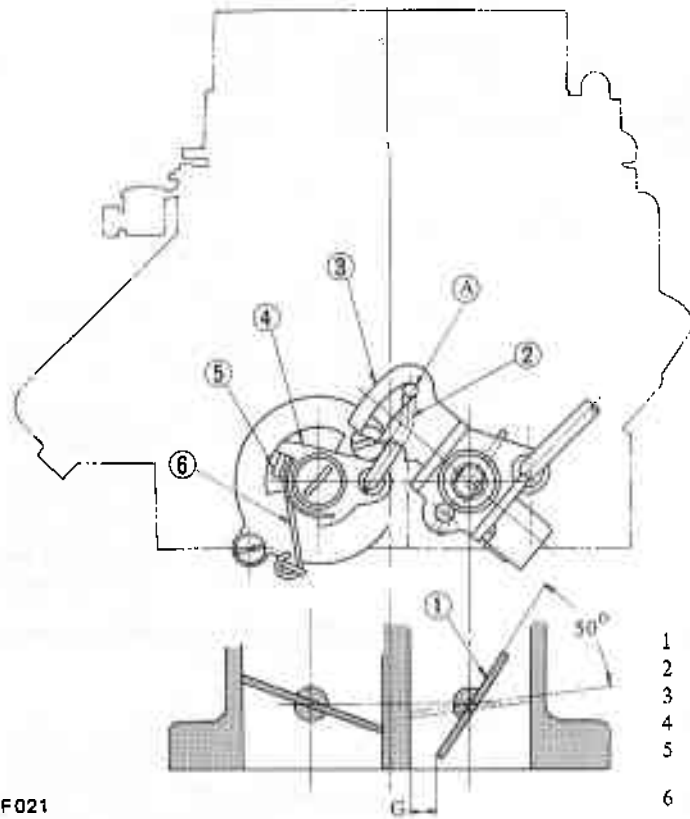
◀ Provided only for Model 213304-421, 213282-341 carburetors for automatic transmission ▶

Proper contact between throttle lever and dash pot stem provides normal dash pot performance. Adjustment of the proper contact can be made by dash pot set screw.

If normal set can not be obtained between dash pot stem and throttle arm, rotate dash pot to the right and left.

And adjust it so that throttle arm touches stem at throttle valve 11° opening.

Clearance B between throttle valve and throttle chamber wall at this time should be as follows:



EF021

- 1 Throttle valve
- 2 Connecting link
- 3 Throttle arm
- 4 Rocking arm
- 5 Secondary throttle arm
- 6 Rocking arm return spring

Model	B Dimension
213304-421	0.780 mm (0.0307 in)
213282-341	0.586 mm (0.0231 in)

Fig. EF-21 Adjusting interlock opening

Figure EF-21 shows that primary throttle valve opens 50°. When primary throttle valve opens 50°, connecting link is contacted with right hand end of a groove on primary throttle arm (A).

When throttle valve further opens, locking arm is detached from secondary throttle arm, permitting the start of secondary system actuation.

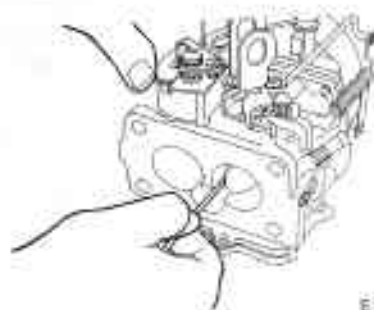
Linkage between primary and secondary throttles will operate properly if distance G between throttle valve and inner wall of throttle chamber, amounts to specifications as shown below:

Model	G Dimension
213304-361 } 213304-421 }	6.3 mm (0.2480 in)
213282-331 } 213282-341 }	7.4 mm (0.2913 in)

213282-221	6.3 mm (0.2480 in)
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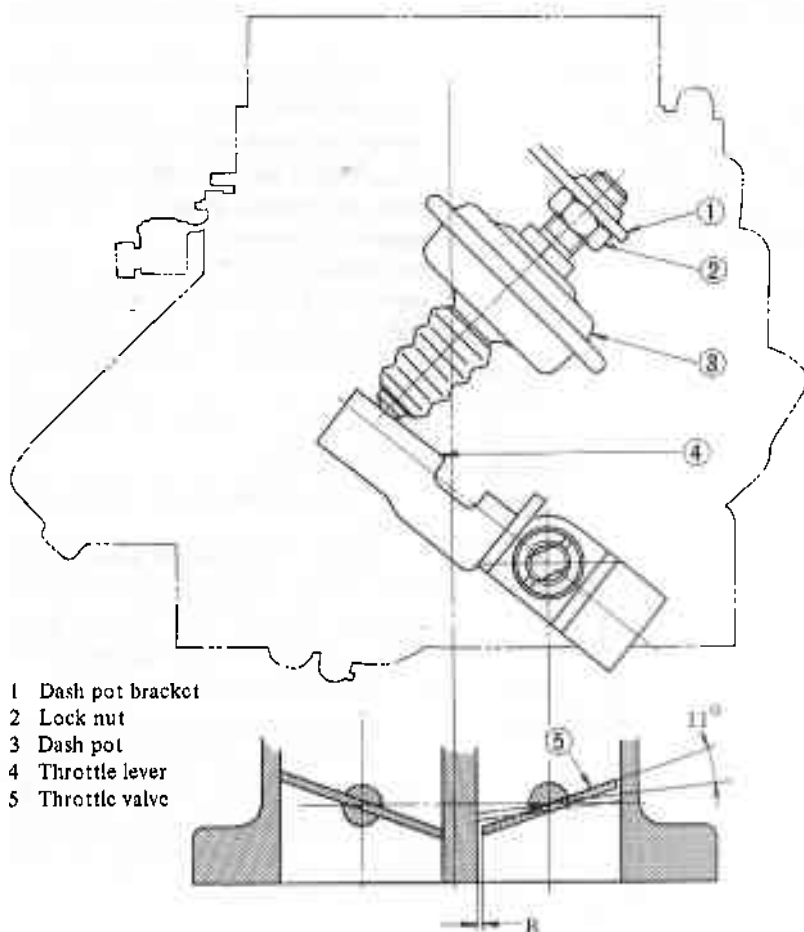
Then fasten loosened lock nut.

Adjustment is made by bending connecting link.



EF022

Fig. EF-22 Measuring interlock opening



- 1 Dash pot bracket
- 2 Lock nut
- 3 Dash pot
- 4 Throttle lever
- 5 Throttle valve

EF023

Fig. EF-23 Measuring dash pot operating clearance

MAJOR SERVICE OPERATION

The perfect carburetor delivers the proper fuel and air ratios for all speeds of the particular engine for which it was designed. By completely disassembling at regular intervals, which will allow cleaning of all parts and passages, the carburetor can be returned to its original condition and it will then deliver the proper ratios as it did when new.

To maintain the accurate carburetion of passages and discharge holes, extreme care must be taken in cleaning.

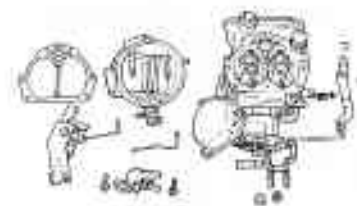
Use only carburetor solvent and compressed air to clean all passages and discharge holes. Never use wire or other pointed instrument to clean as calibration of carburetor will be affected.

Removal

1. Remove air cleaner.
2. Disconnect fuel line, vacuum line and choke wire from carburetor.
3. Remove throttle lever.
4. Remove four nuts and washers retaining carburetor to manifold.
5. Lift carburetor off manifold.
6. Remove and discard the gasket used between carburetor and manifold. Replace it, if necessary.

Disassembly

1. Main jets and slow jets on both primary and secondary sides are accessible from outside carburetor for disassembly.
2. Choke chamber can be detached by removing connecting rod, pump connecting rod, return spring, stop pin and three set screws that hold it.



EF024

Fig. EF-24 Removing choke chamber



EF025

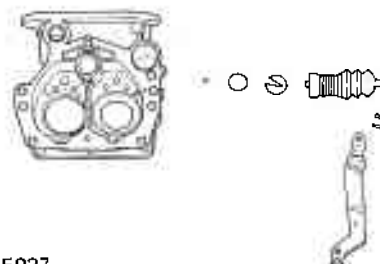
Fig. EF-25 Removing throttle chamber



EF026

Fig. EF-26 Removing choke valve

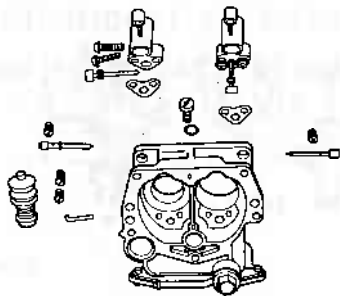
3. Primary and secondary emulsion tubes can be disassembled for a check by removing main air bleed on respective sides.
4. To check accelerator pump, pump arm can be removed.



EF027

Fig. EF-27 Removing accelerator pump

FUEL SYSTEM



EF028

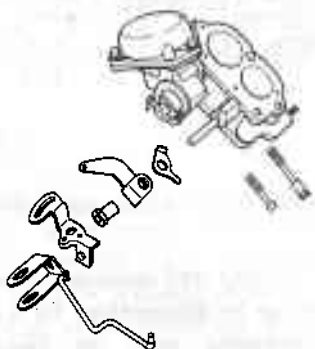
Fig. EF-28 Removing emulsion tubes

5. Throttle chamber can be detached from float chamber by removing rod linking diaphragm with the secondary throttle valve, and loosening three set screws that hold it.

It is preferable to leave throttle valve intact unless otherwise required.

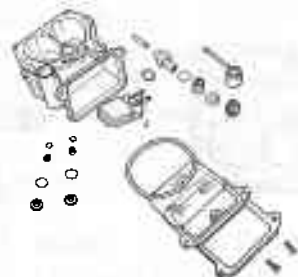
If throttle valve must be disassembled to remedy a defect, secondary throttle valve must be installed to be gap free.

Otherwise, stable idling and slow speed performance will not be obtained.



EF029

Fig. EF-29 Removing throttle valve

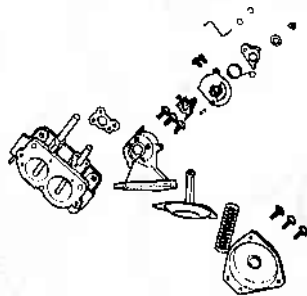


EF030

Fig. EF-30 Disassembling float chamber

6. To check float, float chamber cover can be removed as instructed in a separate paragraph.

7. Diaphragm can be disassembled by removing three set screws that hold diaphragm chamber and other three set screws that hold diaphragm chamber cover. In reassembling it, take care so that edge of diaphragm will not be turned up.



EF031

Fig. EF-31 Disassembling diaphragm

8. In disassembling and reassembling interlocking links, take care so that each linkage has a smooth action, and that it is not fitted in any forced position.

Cleaning and inspection

Dirt, gum, water or carbon contamination in or on exterior moving parts of a carburetor are often responsible for unsatisfactory performance. For this reason, efficient carburetion depends upon careful cleaning and inspection while servicing.

1. Blow all passages and castings with compressed air and blow off all parts until dry.

Note: Do not pass drills or wires through calibrated jets or passages as this may enlarge orifice and seriously affect carburetor calibration.

2. Check all parts for wear. If wear is noted, defective parts must be replaced. Note especially the following:

(1) Check float needle and seat for wear. If wear is noted, assembly must be replaced.

(2) Check throttle and choke shaft bores in throttle chamber and choke chamber for wear or out-of-roundness.

(3) Inspect idle adjusting needle for burrs or ridges. Such a condition requires replacement.

3. Inspect gaskets to see if they appear hard or brittle or if edges are torn or distorted. If any such condition is noted, they must be replaced.

4. Check filter screen for dirt or lint. Clean, and if it is distorted or remains plugged, replace.

5. Check linkage for operating condition.

6. Inspect operation of accelerating pump. Pour fuel into float chamber and make throttle lever operate. And check condition of fuel injection from the accelerating nozzle.

7. Push connecting rod of diaphragm chamber and block passage of vacuum by finger. And when connecting rod becomes free, check for leakage of air and damage of diaphragm.

Assembly and installation

Follow disassembly and removal procedures in reverse.

Replace gaskets, if necessary.

In disassembling and reassembling interlock link and related components, be careful not to bend or deform any of components.

Careful reassembly will restore smooth operation of all interlock parts.

JETS

The carburetor performance depends on jets and air bleeds. That is why these components must be fabricated with utmost care. To clean

FUEL SYSTEM

them, use cleaning solvent and blow air on them. Larger inner numbers stamped on the jets indicate larger diameters. Accordingly, main and slow jets with larger numbers provide richer mixture, and the smaller numbers the leaner mixture. Inversely, the main and slow air bleeds, which are for air to pass through, make the fuel leaner if they bear larger numbers, and the smaller numbers the richer fuel.

Replacement of designated jets to meet the service condition of the vehicle must be carried out keeping in mind the above directions. To cite a practical example, when it becomes necessary to economize fuel at a

limited sacrifice of output to meet frequent light-load operation, use smaller main jets or slow jets, or larger main air bleeds or slow air bleeds than regularly specified. This should meet the purpose. Inversely, when increase in output is desired at the limited sacrifice of fuel consumption, use larger main jets or slow jets, or smaller main air bleeds or slow air bleeds, and that should bring a satisfactory result.

Carburetor secondary jets such as secondary main jet, secondary main air bleed, step jet and step air bleed could be distinguished by their white color painting from jets or air bleed of primary system.

TROUBLE DIAGNOSES AND CORRECTIONS

In the following table, the symptoms and causes of carburetor troubles and remedies for them are listed to facilitate quick repairs.

There are various causes of engine troubles. It sometimes happens that the carburetor which has no defect seems apparently to have some troubles, when electric system is defective. Therefore, whenever the engine has troubles, electric system must be checked first before taking to carburetor adjustment.

Condition	Probable cause	Corrective action
Overflow	Dirt accumulated on needle valve. Fuel pump pressure too high. Needle valve seat improper.	Clean needle valve. Repair pump. Lap or replace.
Excessive fuel consumption	Fuel overflow. Each main jet, slow jet too large. Each main air bleed clogged. Choke valve does not fully open. Outlet valve seat of accelerator pump improper. Linked opening of secondary throttle valve too early.	See above item. Replace. Clean. Adjust. Lap. Adjust.
Power shortage	Each main jet clogged. Each throttle valve does not fully open. Idling adjustment incorrect. Fuel strainer clogged. Vacuum jet clogged. Air cleaner clogged. Diaphragm damaged. Power valve operated improperly.	Clean. Adjust. Repair. Clean. Clean. Clean. Replace. Adjust.
Improper idling	Slow jet clogged. Each throttle valve does not close. Secondary throttle valve operated improperly. Each throttle valve shaft worn. Packing between manifold/carburetor defective.	Clean. Adjust. Overhaul and clean. Replace. Replace packing.

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Condition	Probable cause	Corrective action
Improper idling	Manifold/carburetor tightening improper. Fuel overflow.	Correct tightening. See the first item.
Engine hesitation	Main jet or slow jet clogged. By pass hole, idle passage clogged. Emulsion tube clogged. Idling adjustment incorrect. Secondary throttle valve operated improperly.	Clean. Clean tube. Clean. Correct adjustment. Overhaul and clean.
Engine does not start.	Fuel overflows. No fuel. Idling adjustment incorrect. Fast idle adjustment incorrect.	See the first item. Check pump, fuel pipe and needle valve. Adjust. Adjust.

SPECIFICATIONS AND SERVICE DATA

		213304-361 213304-421		213282-331 213282-341		213282-221	
Applied engine		L18		L16		L14	
		Primary	Secondary	Primary	Secondary	Primary	Secondary
Outlet dia.	mm (in)	30 (1.1811)	34 (1.3386)	28 (1.1024)	32 (1.2598)	28 (1.1024)	32 (1.2598)
Venturi dia.	mm (in)	23 × 14 × 7 (0.9055 × 0.5512 × 0.2756)	30 × 10 (1.1811 × 0.3937)	22 × 7 (0.8661 × 0.2756)	29 × 10 (1.1417 × 0.3937)	21 × 7 (0.8268 × 0.2756)	28 × 10 (1.1024 × 0.3937)
Main jet		#102	#170	#102	#165	#96	#165
Main air bleed		#60	#60	#60	#60	#60	#60
1st slow air bleed	mm (in)	1.0 (0.0394)	—	1.0 (0.0394)	—	1.0 (0.0394)	—
2nd slow air bleed	mm (in)	#210	#100	#180	#100	#220	#100
Slow economizer	mm (in)	1.6 (0.0630)	—	1.6 (0.0630)	—	1.6 (0.0630)	—
Power jet		#55		#45		#50	
Float level	mm (in)	22 (0.8661)		22 (0.8661)		22 (0.8661)	
Fuel pressure	kg/cm ² (lb/sq in)	0.24 (3.414)		0.24 (3.414)		0.24 (3.414)	
Main nozzle	mm (in)	2.3 (0.0906)	2.8 (0.1102)	2.3 (0.0906)	2.5 (0.0984)	2.2 (0.0866)	2.5 (0.0984)

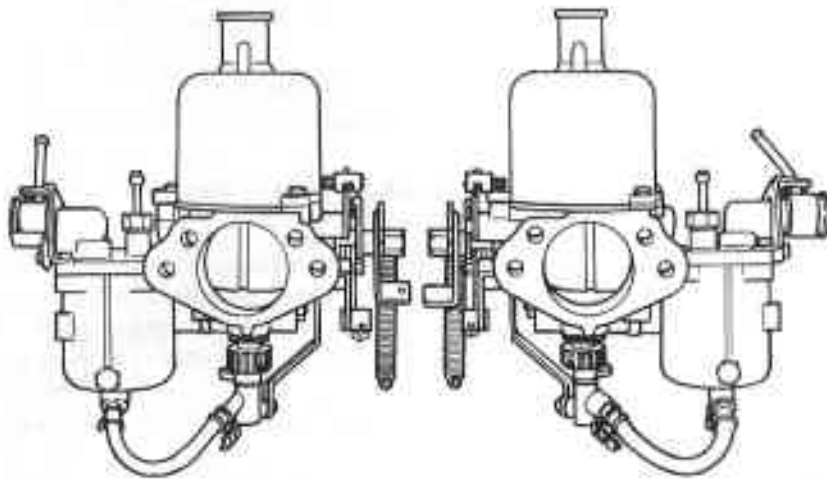
FUEL SYSTEM

SU TYPE TWIN CARBURETOR

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DESCRIPTION



EF032

Fig. EF-32 External view of carburetors

The model HJL38W6 carburetor is of a horizontal, variable venturi type, which is used in the L16 and L18 engines. This carburetor is designed to keep constant flow of intake air through the venturi under all engine speeds. That is, the venturi opening is automatically adjusted by sliding the

suction piston in accordance with change in the volume of intake air.

Metering calibration is accomplished by only the jet needle fixed into the suction piston. Then, the related situation between the taper jet needle and nozzle gives the correct air-fuel mixture covering all operating speeds.

When starting the engine, the nozzle is lowered by pulling the choke knob. Consequently, an enriched air-fuel mixture is obtained. Under normal running, a proper mixture is supplied by sliding the jet needle, and vacuum in the suction chamber operates the suction piston.

This carburetor has the following characteristics:

1. Air flows fast in the venturi when the engine runs at low speeds. Therefore, fuel is fully turned into spray, so that good driveability can be obtained.
2. As the venturi opens wide at high speed running, high output can be provided to reduce fuel intake resistance.
3. The fuel control mechanism is simple in construction because of single nozzle, thus affording trouble-free operation and smoother acceleration.
4. Engine output and accelerating characteristics are greatly improved by the use of two parallel synchronized carburetors. This means that the fuel is fed to two engine cylinders by the front and rear carburetors evenly.